

WHAT IS CLAIMED IS:

1. A transmission for a wheel type working vehicle in
which a mechanical transmission mechanism for mechanically
5 transmitting power, and a hydraulic power transmission
mechanism having a hydraulic pump and a hydraulic motor
driven by said hydraulic pump to transmit hydraulic
transmission power are provided side by side as power
transmission mechanisms for transmitting power of an engine
10 to front and rear wheels via a front and rear wheel driving
output shaft,

wherein an output shaft of said mechanical
transmission mechanism is provided in a direction orthogonal
to a vehicle longitudinal direction;

15 wherein said front and rear wheel driving output shaft
and an output shaft of said hydraulic power transmission
mechanism are provided in the vehicle longitudinal direction;

wherein power from the output shaft of said mechanical
transmission mechanism is transmitted to said front and rear
20 wheel driving output shaft via a bevel gear transmission
mechanism; and

wherein power from the output shaft of said hydraulic
power transmission mechanism is transmitted to said front and
rear wheel driving output shaft via a cylindrical gear
25 transmission mechanism.

2. The transmission for the wheel type working vehicle according to Claim 1,

wherein said bevel gear transmission mechanism
5 meshes a bevel gear provided at said front and rear wheel driving output shaft with a bevel gear connected to the output shaft of said mechanical transmission mechanism; and

wherein said cylindrical gear transmission mechanism meshes a cylindrical gear provided at said front and rear wheel
10 driving output shaft with a cylindrical gear provided at the output shaft of said hydraulic power transmission mechanism.

3. The transmission for the wheel type working vehicle according to Claim 2, further comprising:

15 a mechanical transmission housing, which rotatably houses the output shaft of said mechanical transmission mechanism, and to which said hydraulic pump is mounted; and

a power output housing, which rotatably houses said front and rear wheel driving output shaft and the output shaft
20 of said hydraulic power transmission mechanism, and to which said hydraulic motor is mounted,

wherein said mechanical transmission housing and said power output housing are constituted to be separate bodies, and are integrally mounted to be attachable and detachable.

4. The transmission for the wheel type working vehicle according to Claim 3,

wherein said front and rear wheel driving output shaft comprises a rear wheel driving output shaft which has said
5 bevel gear and said cylindrical gear and always transmits rotating power to the rear wheels, and a front wheel driving output shaft which is selectively separated from or connected to said rear wheel driving output shaft via a clutch mechanism, and selectively transmits the rotating power to the front wheels,
10 and

wherein said clutch mechanism makes it possible to switch between two drive and four drive.

5. The transmission for the wheel type working vehicle
15 according to Claim 4,

wherein said rear wheel driving output shaft is fitted to a rotating supporter at a rear wheel side via a first bearing;

wherein said front wheel driving output shaft is fitted to a rotating supporter at a front wheel side via a second
20 bearing; and

wherein said rotating supporters at the rear wheel side and the front wheel side are respectively mounted to said power output housing to be attachable and detachable.

25 6. The transmission for the wheel type working vehicle

according to Claim 1,

wherein said hydraulic power transmission mechanism comprises a planetary gear type deceleration mechanism for stopping rotation of a ring gear by engagement of a hydraulic
5 operating clutch and outputting rotating power of said hydraulic motor from a planetary carrier via a sun gear included at an input shaft connected to an output shaft of said hydraulic motor by rotation and revolution of a planetary gear, and the output shaft of said hydraulic power transmission
10 mechanism, which is provided on a same axis as that of said input shaft and integrally connected to said planetary carrier.

7. The transmission for the wheel type working vehicle according to Claim 2,

15 wherein said front and rear wheel driving output shaft comprises a rear wheel driving output shaft which has said bevel gear and said cylindrical gear and always transmits rotating power to the rear wheels, and a front wheel driving output shaft which is selectively separated from or connected
20 to said rear wheel driving output shaft via a clutch mechanism, and selectively transmits the rotating power to the front wheels, and

wherein said clutch mechanism makes it possible to switch between two drive and four drive.

8. The transmission for the wheel type working vehicle according to Claim 7,

wherein said rear wheel driving output shaft is fitted to a rotating supporter at a rear wheel side via a first bearing;

5 wherein said front wheel driving output shaft is fitted to a rotating supporter at a front wheel side via a second bearing; and

wherein said rotating supporters at the rear wheel side and the front wheel side are respectively mounted to said power output housing to be attachable and detachable.

9. The transmission for the wheel type working vehicle according to Claim 2,

wherein said hydraulic power transmission mechanism
15 comprises a planetary gear type deceleration mechanism for stopping rotation of a ring gear by engagement of a hydraulic operating clutch and outputting rotating power of said hydraulic motor from a planetary carrier via a sun gear
included at an input shaft connected to an output shaft of said
20 hydraulic motor by rotation and revolution of a planetary gear, and the output shaft of said hydraulic power transmission mechanism, which is provided on a same axis as that of said input shaft and integrally connected to said planetary carrier.

25 10. The transmission for the wheel type working vehicle

according to Claim 3,

wherein said hydraulic power transmission mechanism comprises a planetary gear type deceleration mechanism for stopping rotation of a ring gear by engagement of a hydraulic
5 operating clutch and outputting rotating power of said hydraulic motor from a planetary carrier via a sun gear included at an input shaft connected to an output shaft of said hydraulic motor by rotation and revolution of a planetary gear, and the output shaft of said hydraulic power transmission
10 mechanism, which is provided on a same axis as that of said input shaft and integrally connected to said planetary carrier.